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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,173	10/27/2006	Etsunori Fujita	MUG002-236285	7235
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EXAMINER				
JANG, CHRISTIAN YONGKYUN				
ART UNIT		PAPER NUMBER		
4153				
NOTIFICATION DATE		DELIVERY MODE		
01/28/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO@WOLFBLOCK.COM

Office Action Summary

Application No.

10/576,173

Applicant(s)

FUJITA ET AL.

Examiner

Christian Y. Jang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-16 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date 4/18/2006, 11/29/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
2. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Specification

3. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

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4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. Applicant's abstract contains the legal phraseology "means" numerous times. Appropriate correction is required.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 14-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 14-16 are directed to a computer program, which is a non-statutory subject matter because it is intangible and abstract. In order to overcome this rejection, applicant should amend line 1 of claims 14, "computer program" to "program, embodied on a computer readable medium,".

Claim Objections

8. Claims 6, 9, & 15 are objected to because of the following informalities:
- a. Claim 6: "stably show" should be "stably showing"

- b. Claim 9: "stably show" should be "stably showing"
- c. Claim 15: "stably show" should be "stably showing"

Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1, 5, 6, 8, 9, 11, 14, & 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
11. The instant claims recite the phrase "lap rate" numerous times throughout the said claims. An example is shown in claim 1, line 14. It is unclear what is meant by "lap rate". For purposes of examination, the phrase "lap rate" is understood to be the "overlap rate".
12. Claims 1-4, 7, 9, 10, 14, & 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
13. The instant claims recite the phrases "peak value on the upper limit side" and "peak value on the lower limit side" numerous times throughout the said claims. An example is in claim 1, lines 8-9. It is wholly unclear what is meant by "upper limit side" and "lower limit side". For purposes of examination, the phrases are understood to mean "maximum peak value" and "minimum peak value", respectively.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1-12, 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (US 2004/0236235) in view of Arai et al. (US 2002/0156392).

16. Regarding claims 1, 9-11, 12, 14, & 15, Fujita discloses the invention substantially as claimed: a device comprising: a living body signal peak value detecting means for detecting the peak value in each cycle of an original waveform of the living body signal data collected by a living body signal measurement device (Fujita, [0014], lines 6-8);

a power value calculating means for calculating the difference between a peak value on the upper limit side and a peak value on the lower limit side for every prescribed time period from each peak value obtained by said living body signal peak value detecting means and for setting the difference as the power value (Fujita, [0014], lines 8-14)

a power value inclination calculating means for determining an inclination of said power values to the time base during the prescribed time period by slide calculating the prescribed times at a prescribed lap rate for the prescribed time period (Fujita, [0014], lines 14-18).

However, Fujita does not disclose a fatigue degree calculating means for calculating an integral value by absolute value treatment of time base signal of power value inclination obtained from the slide calculation by said power value inclination calculating means to determine the obtained integral value as the degree of fatigue.

Arai teaches the means of using analyzed biological data through an absolute value treatment in [0073], lines 20-26 for the purpose of inspecting biological rhythms. The examiner notes that fatigue is characterized by reduced neurological physiological function and the means employed by Arai can be used to indicate the degree of fatigue.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Fujita with the absolute value treatment of Arai in order to determine the degree of fatigue.

17. Regarding claims 2 & 10, Fujita modified with Arai teaches the fatigue degree measurement device according to claim 1,

wherein said living body signal peak value detecting means is a means to perform smoothing differentiation of the living body signal data to determine the peak value on the upper limit side and the peak value on the lower limit side for the width fluctuation of the waveform with a predetermined threshold value (Fujita, [0018], lines 3-8)

18. Regarding claim 3, Fujita modified with Arai teaches the fatigue degree measurement device according to claim 1,

wherein said power value calculating means is a means to calculate the difference between the mean value of the peak value on the upper limit side and the mean value of the peak value on the lower limit side within the prescribed time period range of the living body signal data as the power value (Fujita, [0020], lines 3-7)

19. Regarding claim 4, Fujita modified with Arai teaches the fatigue degree measurement device according to claim 3,

wherein said power value calculating means is a mean to calculate the square value of the difference between the mean value of the peak value on the upper limit side and the mean value of the peak value on the lower limit side within the prescribed time period range of the living body signal data as the power value (Fujita, [0021], lines 3-6).

20. Regarding claim 5, Fujita modified with Arai teaches the fatigue degree measurement device according to claim 1,

wherein the time interval used in the slide calculation in said power value inclination calculating means is 180 seconds and the lap rate is 90% (Fujita, [0064], lines 18-21).

21. Regarding claims 6, 9-12, & 15, Fujita modified with Arai teaches the fatigue degree measurement device according to claim 1, further comprising:

a maximum Lyapunov index calculating means for calculating the maximum Lyapunov index by chaos analyzing said living body signal data (Fujita, [0015], lines 4-6);

a maximum Lyapunov index peak value detecting means for detecting the peak value in each cycle of a time series change waveform of the calculated maximum Lyapunov index (Fujita, [0015], lines 6-9);

a maximum Lyapunov index inclination calculating means for determining an inclination of each peak value of the maximum Lyapunov indexes obtained by the maximum Lyapunov index peak value detecting means to the time base during the prescribed time period by slide calculating the prescribed times at a prescribed lap rate for the prescribed time period, in addition to said inclination of the power value (Fujita, [0015], lines 10-14); and

a comparing and determining means for determining as the generating point of a fatigue signal when the inclination of the power value obtained by slide calculating using said power value inclination calculating means and the maximum Lyapunov index obtained by slide calculating using the maximum Lyapunov index inclination calculating means (Fujita, [0015], lines 15-19) stably show the phase difference of substantially 180° among time series signals (Fujita, [0016], lines 11-14). The examiner notes that opposite phases are in 180° in respect to each other.

22. Regarding Claims 7 & 10, Fujita modified with Arai teaches the fatigue degree measurement device according to claim 6,

wherein said maximum Lyapunov index peak value detecting means is a means to perform smoothing differentiation of the time series change waveform of the maximum Lyapunov index to determine the peak value on the upper limit side and the

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peak value on the lower limit side for the width fluctuation of the waveform with a predetermined threshold value (Fujita, [0019], lines 3-8).

23. Regarding Claims 8 & 11, Fujita modified with Arai teaches the fatigue degree measurement device according to claim 6,

wherein the time interval used in the slide calculation in said maximum Lyapunov index inclination calculating means is 180 seconds and the lap rate is 90(Fujita, [0064], lines 18-21).

Allowable Subject Matter

24. Claims 13 & 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

25. Claims 13 & 16 are indicated as allowable subject matter in that the prior art of record, although fully disclosing the use of frequency analysis of the change in the inclinations of power value and the maximum Lyapunov index appeared in time series, does not teach the determination of a central or peripheral fatigue from the results.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTIAN Y. JANG whose telephone number is (571)270-3820. The examiner can normally be reached on Mon. - Thurs. (7AM-5PM) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jackson can be reached on 571-272-4697. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CJ
/C. Y. J./
Examiner, Art Unit 4153
1/8/08

/Gary Jackson/
Supervisory Patent Examiner
Art Unit 4153